GARMIN

400W Series

Quick Reference

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This manual reflects the operation of Main System Software version 2.00, 3.00, 4.00, 5.00, 5.10, or later. Some differences in operation may be observed when comparing the information in this manual to earlier or later software version.

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WARNINGS, CAUTIONS, and NOTES

WARNING: *VNAV is to be used for advisory purposes only. VNAV messages or vertical speed required should not be used to maintain terrain or ATC clearances. Terrain and ATC clearances are the sole responsibility of the pilot.*

WARNING: *The altitude calculated by the 400W-series is geometric height above mean sea level and could vary significantly from altitude displayed by pressure altimeters in aircraft.*

WARNING: *The Jeppesen database incorporated in the 400W-series must be updated regularly in order to ensure that its information is current. Updates are released every 28 days. A database information packet is included in your 400W-series package. Pilots using an out-of-date database do so entirely at their own risk!*

WARNING: *Do not use data link weather information for maneuvering in, near, or around areas of hazardous weather. Information contained within data link weather products may not accurately depict current weather conditions.*

WARNING: *Do not use the indicated data link weather product age to determine the age of the weather information shown by the data link weather product. Due to time delays inherent in gathering and processing weather data for data link transmission, the weather information shown by the data link weather product may be significantly older than the indicated weather product age.*

CAUTION: *GPS receivers operate by receiving and decoding very low power radio signals broadcast by satellites. It is possible that in some situations other radio equipment or electronic equipment used in close proximity to a GPS receiver may create electromagnetic interference (EMI) which may affect the ability of the GPS receiver to receive and decode the satellite signals. In such event, the interference may be reduced or eliminated by switching off the source of interference or moving the GPS receiver away from it.*

CAUTION: *The Global Positioning System is operated by the United States government, which is solely responsible for its accuracy and maintenance. The system is subject to changes which could affect the accuracy and performance of all GPS equipment. Although the Garmin 400W-series are precision electronic NAVigation AIDs (NAVAID), any NAVAID can be misused or misinterpreted and therefore become unsafe.*

CAUTION: *Use the 400W-series at your own risk. To reduce the risk of unsafe operation, carefully review and understand all aspects of this Owner's Manual and the Flight Manual Supplement, and thoroughly practice basic operation prior to actual use. When in actual use, carefully compare indications from the 400W-series to all available navigation sources, including the information from other NAVAIDS, visual sightings, charts, etc. For safety, always resolve any discrepancies before continuing navigation.*

CAUTION: *The electronic chart is an aid to navigation and is designed to facilitate the use of authorized government charts, not replace them. Land and water data is provided only as a general reference to your surroundings. The positional accuracy of the land and water data is not of a precision suitable for use in navigation and it should not be used for navigation. Only official government charts and notices contain all information needed for safe navigation – and, as always, the user is responsible for their prudent use.*

CAUTION: *The Terrain feature is for supplemental awareness only. The pilot/crew is responsible for all terrain and obstacle avoidance using information not provided by the 400W-series Terrain feature.*

CAUTION: *The Garmin 400W-series does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could void your warranty and authority to operate this device under FCC Part 15 regulations.*

NOTE: *The GNS 400W-series units use a different database than in the legacy units. The databases are incompatible between units. The GNS 400W-series units must use a WAAS enabled database.*

NOTE: *This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to our website at www.garmin.com/prop65.*

NOTE: *It is the pilot's responsibility for initial missed approach guidance in accordance with published procedure. The unit may not provide correct guidance until established on a defined leg.*

NOTE: *GPS level of service annunciations (LPV, ENR, etc.) are not applicable to the external CDI (or HSI) when VLOC is active.*

Model Descriptions

This guide covers the operation of the GPS 400W, GNC 420W, GNC 420AW, GNS 430W, and GNS 430AW. In general, all models will be referred to as the *400W-series*, except where there are physical or operational differences. The *400W-series* units are 6.25" wide and 2.66" high. The display is a 240-by-128 pixel color LCD. The units include two removable data cards: one with a Jeppesen database (inserted in the left-most card slot) and the second is a Terrain database (inserted in the right-most card slot).

GPS 400W

The GPS 400W is a GPS-only unit with a WAAS GPS engine and is TSO C146a certified for en route, terminal, precision, and non-precision approaches. The GPS 400W can simultaneously give aviators vital approach information and weather and traffic data in relation to their position on a color moving map display. Thanks to a high-contrast color display, the information can be easily read from wide viewing angles even in direct sunlight. Its color moving map features a built-in database that shows cities, highways, railroads, rivers, lakes, coastlines, and a complete Jeppesen aviation database. The Jeppesen aviation database (can be updated with a front-loading data card) contains all airports, VORs, NDBs, Intersections, FSS, Approach, DPs/STARs, and SUA information. The obstacle and terrain databases provide an aid to navigation to help you work with approved navigation charts.

Pilots will enjoy the GPS 400W as a multi-function display (MFD), especially when it is coupled with traffic, lightning detection, and weather interfaces like Ryan TCAD, TIS from the Garmin GTX 330 Mode S transponder, L3 SKYWATCH™, or STORMSCOPE® WX 500. With the FDE prediction program included with the Trainer CD, the GPS 400W may be used for oceanic or remote operations. For the latest in graphical and textual weather information, the GPS 400W can connect to XM Satellite Radio's XM WX Weather Service via the GDL 69/69A datalink receiver. The GDL 69A can also allow you to subscribe to XM audio services.

GNC 420W and GNC 420AW

The GNC 420W and GNC 420AW include all of the features of the GPS 400W, and also include an IFR certified airborne VHF communications transceiver. This multipurpose unit is available with either a 10-watt (GNS 420W) or 16-watt (GNS 420AW) Com transmitter. Since the only difference between these two units is the power of the communications transmitter, references to the GNC 420W will also include the GNC 420 AW.

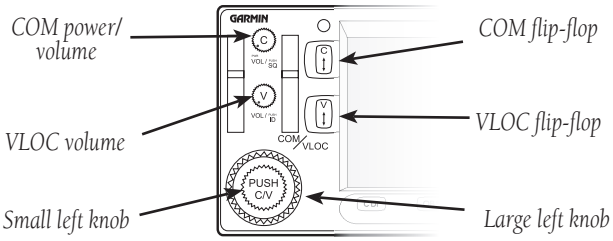
GNS 430W and GNS 430AW

The GNS 430W and GNS 430AW include all of the features of the GPS 420W/420AW, and also include IFR certified airborne VOR/Localizer and Glideslope receivers. This multipurpose unit is available with either a 10-watt (GNS 430W) or 16-watt (GNS 430AW) Com transmitter. Since the only difference between these two units is the power of the communications transmitter, references to the GNS 430W will also include the GNS 430 AW.

Helicopter Installations

In Helicopter installations, the ownship icon is set to a helicopter. When present, HTAWS will be used instead of TAWS. See the Garmin Optional Displays Pilot's Guide Addendum P/N 190-00356-30 Rev G, or later, for HTAWS information.

Left-hand Keys and Knobs



In the GNC 420W and the GNS 430W, the **COM power/volume** knob controls unit power and communications radio volume. Press the knob momentarily to enable/disable automatic squelch control.

In the GNS 430W, the **VLOC volume** knob controls audio volume for the selected VOR/ Localizer frequency. Press momentarily to enable/disable the ident tone.

In the GNC 420W and GNS 430W, the **large left** knob is used to tune the megahertz (MHz) value of the standby frequency for the COM transceiver or the VLOC receiver, whichever is currently selected by the tuning cursor.

In the GNC 420W and GNS 430W, the **small left** knob is used to tune the kilohertz (kHz) value of the standby frequency for the COM transceiver or the VLOC receiver, whichever is currently selected by the tuning cursor. Press this knob momentarily to toggle the tuning cursor between the COM and VLOC windows.

In the GNC 420W and GNS 430W, the **COM flip-flop** key is used to swap the active and standby COM frequencies. Press and hold to select emergency channel (121.500 MHz).

In the GNS 430W, the **VLOC flip-flop** key is used to swap the active and standby VLOC frequencies (i.e., make the selected standby frequency active).

Right-hand Keys and Knobs

The **range** key (**RNG**) allows you to select the desired map scale. Press the up arrow side of the key to zoom out or the down arrow side to zoom in.

The **direct-to** key allows you to enter a destination waypoint and establishes a direct course to the selected destination.

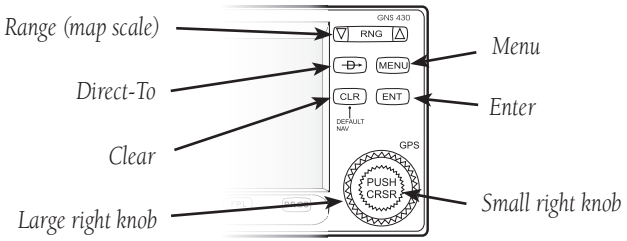
The **menu** key (**MENU**) displays a context-sensitive options list. The options list allows you to make settings changes that relate to the currently displayed page.

The **clear** key **(CLR)** is used to erase information or cancel an entry. Press and hold this key to immediately display the Default NAV Page.

The **enter** key (**ENT**) is used to approve an operation or complete data entry. It is also used to confirm information, such as during power on.

The **large right** knob is used to select between the various page groups: NAV, WPT, AUX or NRST. With the on-screen cursor enabled, the **large right** knob allows you to move the cursor about the page.

The **small right** knob is used to select between the various pages within one of the groups listed above. Press this knob momentarily to display the on-screen cursor. The cursor allows you to enter data and/or make a selection from a list of options.



Bottom Row Keys

GPS 400W
GNC 420W

GNS 430W

NRST

The **nearest** (**NRST)** key (GPS 400W and GNC 420W only) displays the nearest airports page. Then, turning the **small right** knob steps through the NRST pages.

CDI

In the GNS 430W, the **CDI** key is used to toggle which navigation source (GPS or VLOC) provides output to an external HSI or CDI.

OBS

The **omni-bearing selector (OBS)** key is used for two functions: to activate OBS selection and as a suspend key.

As a Suspend (SUSP) key, it is used to select manual or automatic sequencing of waypoints. Pressing this key selects SUSP mode, which retains the current "active to" waypoint as your navigation reference even after passing the waypoint (i.e., prevents sequencing to the next waypoint). Pressing the **OBS** key again returns to normal operation, with automatic sequencing of waypoints.

Whenever OBS mode is selected, you may set the desired course to/from a waypoint using the OBS Page, or an external OBS selector on your HSI or CDI.

MSG

The **message (MSG)** key is used to view system messages, important warnings, and requirements.

FPL

The **flight plan (FPL)** key allows you to create, edit, activate and invert flight plans, as well as access approaches, departures and arrivals. A closest-point-to-flight-plan feature is also available from the **flight plan** key.

PROC

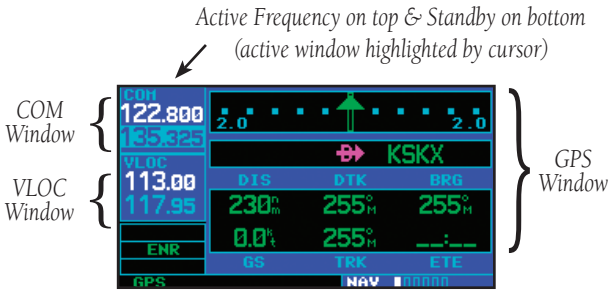
The **procedures (PROC)** key allows you to select approaches, departures and arrivals from your active flight plan. When using a flight plan, available procedures for your departure and/or arrival airport are offered automatically. Otherwise, you may select the desired airport, then the desired procedure.

Powering on the Unit

1. Turn the **COM power/volume** knob clockwise to turn the unit on and set the desired radio volume.
2. The Main and GPS software version page appears briefly, followed by land and terrain database pages, as the unit conducts self-tests to ensure proper operation.
3. Once the self-test concludes, database confirmation pages are displayed, showing the effective and expiration dates of the databases on the NavData® card. Press the **ENT** key to acknowledge the last database page and proceed to the instrument panel self-test page. There may be more self-test screens depending on optional equipment installed in your aircraft.
4. The instrument panel self-test page allows you to verify that the unit is communicating properly with in-panel instruments. Compare on-screen indications with the information depicted on connected instruments, such as the CDI, HSI, RMI and/or external annunciators. Once you have verified proper operation, turn the **large right** knob to select "Set Full Fuel?", "Go To Checklist", or "OK?" (to display the Satellite Status Page), and then press the **ENT** key.
5. When the GPS receiver has acquired a sufficient number of satellites to determine a position, the Map Page will automatically appear showing your present position.

Power-up Sequence

Screen Layout (windows)



The 400W-series display is divided into four separate "windows" (or screen areas). The top left 1/4 of the display provides a COM window (top two lines) and a VLOC window (bottom two lines) The three lines at the bottom left of the display are used for terrain, flight phase, and GPS integrity annunciators. The right 3/4 of the display consists of a GPS window, which is where you'll find the various navigation, waypoint information and settings "pages."

Each unique screen of information is referred to as a page. Pages are typically selected using the **small** and **large right** knobs—with the cursor removed from the GPS window. See the following page for details on arrangement of the 400W-series main pages.

Cursors

There are two separate cursors: a tuning cursor and a GPS window cursor. The tuning cursor is used to select the standby COM or VLOC frequency. If desired, press the **small left** knob to move the tuning cursor to the VLOC window. Then, use the **small** and **large left** knobs to select the desired frequency. The **COM** and **VLOC flip-flop** keys are used to swap the active and standby frequencies. Push in on **small right** knob and then turn the **large right** knob to move the GPS window cursor around the page.

Frequency Selection

1. If the tuning cursor is not currently in the desired window (COM or VLOC), press the **small left** knob momentarily to switch the highlight between the COM and VLOC windows. Adjusting the frequencies with the **large** and **small left** knobs will affect the standby frequency.

2. Turn the **large left** knob to select the desired megahertz (MHz) value. For example, the "117" portion of the frequency "117.80".

3. Turn the **small left** knob to select the desired kilohertz (kHz) value. For example, the ".80" portion of the frequency "117.80".

4. To activate the selected frequency, press the appropriate **flip-flop** key to swap the COM or VLOC frequency from the standby into the active window.

To Quickly Tune and Activate the 121.500 Emergency Channel (GNS 430W and GNC 420W only)

1. Press and hold the **COM flip/flop** key for approximately two seconds.

Data Entry

Data is entered in the GPS window using the **large** and **small right** knobs. The **large right** knob is used to move the cursor between fields. The **small right** knob is used to select individual characters at the highlighted cursor location.

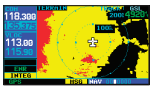
(**Small right** knob to select pages within the group)

(**Large right** knob to change page groups)

NAV Group

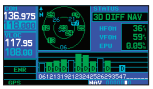
Default NAV

Map


Terrain

NAVCOM

Position


Satellite Status

VNAV

Five, or more, NAV pages are available when the unit's installation includes connection to traffic and/or weather information sources.

WPT Group

Airport Location

Airport Runway

Airport Frequency

Airport Approach

Airport Arrival

Airport Departure

Intersection

NDB

VOR

User Waypoint

Selection of any main page is performed using the **large** and **small right** knobs. When the GPS window cursor is off, the **large right** knob selects the page group: NAV, WPT, AUX or NRST. The **small right** knob selects the desired page within a group. To quickly select the Default NAV Page, press and hold the **CLR** key.

AUX Group

Flight Planning

Utility

Setup 1

Setup 2

NRST Group

Nearest Airport

Nearest Intersection

Nearest NDB

Nearest VOR

Nearest User Wpt

Nearest Center

Nearest FSS

Nearest Airspace

FPL Group

Active Flight Plan

Flight Plan Catalog

*Flight plan pages are selected by pressing the **FPL** key and using the **small right** knob to select the desired page.*

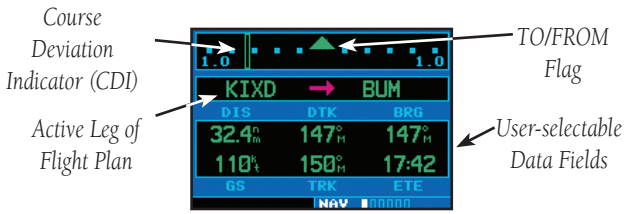
PROC

Procedures

*The Procedures pages are selected by pressing the **PROC** key and using the **small or large right** knobs to select a procedure.*

DEFAULT NAV PAGE / ANNUNCIATORS

Default NAV Page



The following symbols are used (directly below the CDI) to depict the active leg of a flight plan or direct-to:

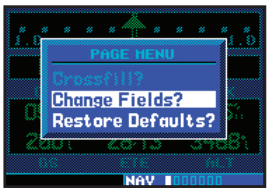
- *Course to a Waypoint, or Desired Course between Two Waypoints*
- *Direct-To a Waypoint*
- *Vectors-To-Final*
- *Left-hand Holding Pattern*
- *Right Procedure Turn*
- *Right-hand Holding Pattern*
- *Left Procedure Turn*
- *DME Arc to the left*
- *DME Arc to the right*

To Quickly Display the Default NAV Page

1. From any page, press and hold the **CLR** key for approximately two seconds.

To Select a Different Data Item for any Data Field

1. With the default NAV page displayed, press the **MENU** key to display an options menu.
2. Turn the **large right** knob to highlight the "Change Fields?" option, and press the **ENT** key to select this option.

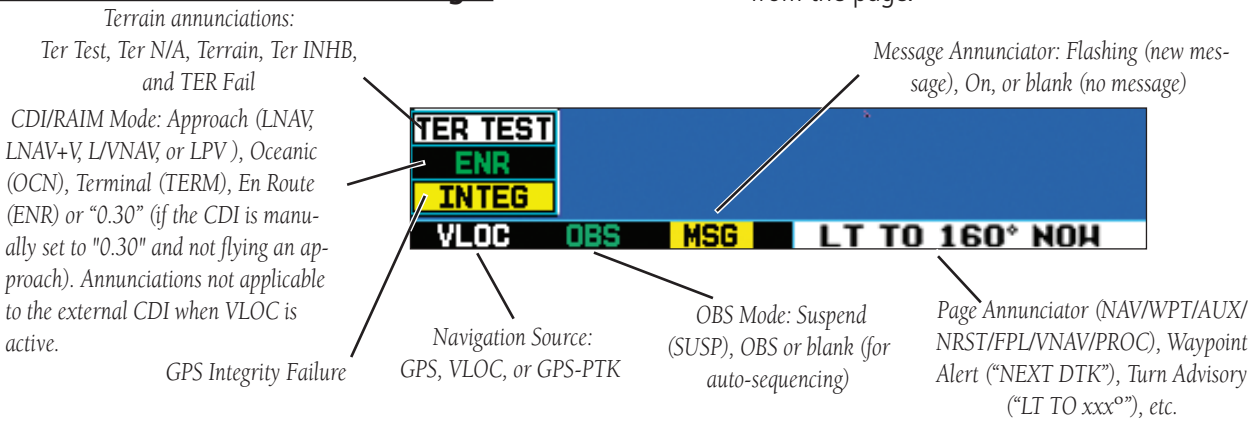


3. Use the **large right** knob to highlight the data field you wish to change.

4. Turn the **small right** knob to display the list of available data items. Continue turning the **small right** knob to select the desired data item from the list.

5. Press the **ENT** key to select the desired data item and return to the default NAV page.
6. Press the **small right** knob to remove the cursor from the page.

Bottom Row Annunciators and Messages


Terrain annunciations: Ter Test, Ter N/A, Terrain, Ter INHB, and TER Fail
CDI/RAIM Mode: Approach (LNAV, LNAV+V, L/VNAV, or LPV), Oceanic (OCN), Terminal (TERM), En Route (ENR) or "0.30" (if the CDI is manually set to "0.30" and not flying an approach). Annunciations not applicable to the external CDI when VLOC is active.
GPS Integrity Failure
Navigation Source: GPS, VLOC, or GPS-PTK
OBS Mode: Suspend (SUSP), OBS or blank (for auto-sequencing)
Page Annunciator (NAV/WPT/AUX/ NRST/FPL/VNAV/PROC), Waypoint Alert ("NEXT DTK"), Turn Advisory ("LT TO xxx°"), etc.
Message Annunciator: Flashing (new message), On, or blank (no message)
TER TEST
ENR
INTEG
VLOC
OBS
MSG
LT TO 160° NOW

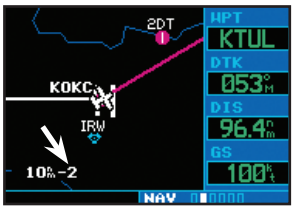
Map Page

The following symbols are used to depict the various airports and navaids on the map page:

- *Airport with hard surface runway(s); Primary runway shown*
- *Airport with soft surface runway(s) only*
- *Private Airfield*
- *Intersection*
- *VOR*
- *VORTAC*
- *VOR/DME*
- *TACAN*
- *DME*
- *NDB*
- *Localizer*
- *Locator Outer Marker*
- *Heliport*

To Select a Map Scale

1. Press the up arrow on the **RNG** key to zoom out to a larger map area.
2. Press the down arrow on the **RNG** key to zoom in to a smaller map area with more detail.



To Quickly Declutter the Map Display

The 400W series supports four levels of map decluttering.

1. Press the **CLR** key momentarily to change the amount of map detail. The declutter level will appear adjacent to the map scale.
2. Press the **CLR** key as needed to select the desired amount of map detail.

To Turn the Data Fields On/Off on the Right Side of the Map

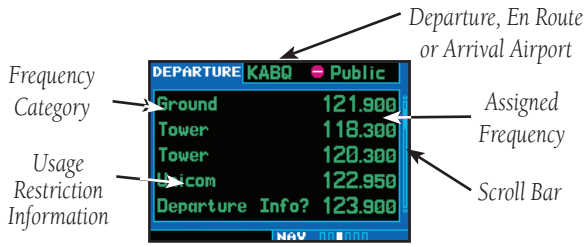
1. With the map page displayed, press **MENU** to display an options menu.
2. Turn the **large right** knob to highlight "Data Fields Off?" and press the **ENT** key.
3. To re-display the data fields, follow steps 1 and 2, but instead select "Data Fields On?" from the options menu.

To Select a Different Data Item for any Data Field:

1. With the map page displayed, press the **MENU** key to display an options menu.
2. Turn the **large right** knob to highlight "Change Fields?" and then press **ENT**.
3. Use the **large right** knob to highlight the data field you wish to change.
4. Turn the **small right** knob to display the list of available data items. Continue turning the **small right** knob to select the desired data item from the list.
5. Press the **ENT** key to select the desired data item and return to the map page.
6. Press the **small right** knob momentarily to remove the cursor from the page.

NAVCOM Page

The *NAVCOM page* provides a list of the airport communication and navigation frequencies at your departure, en route and arrival airports.



To Select a Frequency List for a Departure, En Route, or Arrival Airport

1. Press the **small right** knob to activate the cursor.
2. Turn the **large right** knob to place the cursor on the airport identifier field (top line on the NAVCOM page).
3. Turn the **small right** knob to select the desired airport and press **ENT**.

To Scroll Through the List of Frequencies

1. Activate the cursor, if not already active, by pressing the **small right** knob.
2. Turn the **large right** knob to move the cursor through the list of frequencies. If there are more frequencies in the list than can be displayed on the screen, a scroll bar along the right-hand side of the screen will indicate which part of the list is currently being displayed.

Auto-Tuning a Frequency from the NAVCOM Page

1. Highlight the desired frequency by scrolling through the list of frequencies, as described in the previous procedure.
2. To place a frequency in the standby field of the COM or VLOC window, highlight the desired frequency and press the **ENT** key.

Terrain Page

To display the TERRAIN Page, select the NAV group and turn the **small right** knob until the TERRAIN Page is displayed. The page displays terrain information, aircraft ground track, and GPS-derived MSL altitude (GSL altitude). Altitude is shown in increments of 20 feet or in increments of 10 meters, depending on unit configuration. For units with installed in helicopters or equipped with optional HTAWS, refer to 400W/500W Series Garmin Optional Displays, P/N 190-00356-30 Rev G, or later.

To inhibit TERRAIN:

1. Select the TERRAIN Page and press **MENU**. "Inhibit Terrain?" is selected by default.
2. Press **ENT.** The TERRAIN system is inhibited. The **TER INHB** annunciation is displayed in the terrain annunciator field whenever terrain is inhibited.

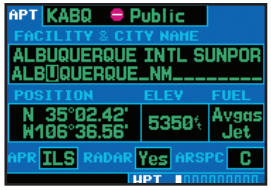
Obstacle Symbol	Unlighted Obstacle		Lighted Obstacle		Color	TERRAIN/Obstacle Location
	< 1000' AGL	> 1000' AGL	< 1000' AGL	> 1000' AGL		
					Red	Terrain/Obstacle above or within 100 ft below current aircraft altitude
					Yellow	Terrain/Obstacle between 100 ft and 1000 ft below the aircraft altitude

Terrain Color Symbology

Viewing Airport Information

1. From any page, press and hold **CLR** to select the default NAV page. (You may skip this step if you are already viewing any of the main GPS pages.)
2. Turn the **large right** knob to select the WPT page group. "WPT" will appear in the lower right corner of the screen.
3. Turn the **small right** knob to select the desired WPT page. Airport information is displayed on the first six WPT pages: airport location, airport runway, airport frequency, airport approach, airport arrival and airport departure.
4. Press the **small right** knob to activate the cursor.
5. Use the **small** and **large right** knobs to enter the identifier of the desired airport.
6. Once the identifier is entered, the information for that airport will appear on the page. Press **ENT** to accept the selected identifier.
7. To view the other airport information pages, press the **small right** knob to remove the flashing cursor and turn the **small right** knob to select the desired page.

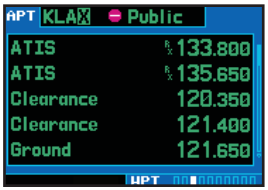
Viewing Airport Information by Facility Name or City



1. Select the airport location page.
2. Press the **small right** knob to activate the cursor.
3. Turn the **large right** knob to highlight the facility name (second line) or the city (third line) field.
4. Use the **small** and **large right** knobs to enter the facility name or city location of the desired destination waypoint. As you spell the facility name or city, the 400W series Spell'N'Find feature will select the first entry in the database based upon the characters you have entered up to that point.
5. Once the name is entered, the information for that airport will appear on the page. Press **ENT** to accept the selected identifier.
6. To view the other airport information pages, press the **small right** knob to remove the flashing cursor and turn the **small right** knob to select the desired page.

Auto-Tuning a Frequency from a List (420W/430W only)

The 400W-series auto-tune feature allows you to quickly select any displayed database frequency as your standby frequency. With a minimum of keystrokes, any frequency listed on the airport frequency page can be transferred to the standby field of the COM or VLOC window. The Airport Frequency page in the GPS 500W allows you to view frequency information and scroll through the list by turning the **large right** knob.



1. Select the airport frequencies page from the WPT page group.
2. Press the **small right** knob to place the cursor on the airport identifier field.
3. Use the **small** and **large right** knobs to enter the identifier of the desired airport. Press **ENT** when finished.
4. Turn the **large right** knob to highlight the desired frequency.
5. Press **ENT** to place the highlighted frequency in the standby COM or VLOC window field (as appropriate).
6. To activate the selected frequency, press the **COM flip/flop** or **VOR flip/flop** key (as appropriate).

To Select a Direct-To Destination

1. Press the **direct-to** key. A Select Direct-To Waypoint page will appear, with the waypoint identifier field highlighted.
2. Use the **small** and **large right** knobs to enter the identifier of the desired destination waypoint.
3. Press **ENT** to confirm the selected waypoint. Press **ENT** again to activate the direct-to function.

To Select a Direct-To Destination from the Map Page

1. Select the map page from the NAV page group.
2. Press the **small right** knob to display a panning pointer.
3. Turn the **small** and **large right** knobs to place the panning pointer at the desired destination location.
4. If the panning pointer is placed on an existing airport, navaid or user waypoint, the waypoint name will be highlighted. Press **direct-to** and then **ENT** twice to activate a direct-to leg to the waypoint.
5. If the panning pointer is placed on an open location on the map page, press **direct-to** and then **ENT** twice to create a "+MAP" waypoint and activate a direct-to leg to it.

To Select a Direct-To Destination by Facility Name or City

1. Press the **direct-to** key. The Select Direct-To Waypoint page will appear, with the waypoint identifier field highlighted.
2. Turn the **large right** knob to highlight the facility name (second line) or the city (third line) field.

3. Use the **small** and **large right** knobs to enter the facility name or city location of the desired destination waypoint. As you spell the facility name or city, the 400W series Spell'N'Find feature will select the first entry in the database based upon the characters you have entered up to that point.
4. Continue turning the **small right** knob to scroll through any additional database listings for the selected facility name or city. You can also scroll backwards with the **small right** knob if you scroll past the desired waypoint.
5. Press **ENT** to confirm the selected waypoint, and **ENT** to activate the direct-to function.

To Select a Nearby Airport or a Flight Plan Waypoint as a Direct-To Destination

1. Press the **direct-to** key.
2. Turn the **large right** knob to highlight the nearest airport (NRST) or flight plan (FPL) field.
3. Turn the **small right** knob to display a window listing nearby airports or all waypoints in the active flight plan.
4. Continue turning the **small right** knob to scroll through the list and highlight the desired waypoint.
5. Press **ENT** to confirm the selected waypoint, and **ENT** to activate the direct-to function.

To View a List of the Nearest Airports

1. From any page, press and hold the **CLR** key to select the default NAV page. You may skip this step if you are already viewing any of the main GPS pages.
2. Turn the **large right** knob to select the NRST page group. "NRST" will appear in the lower right corner of the screen.

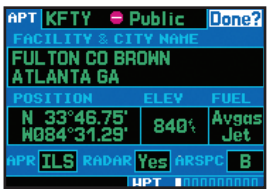
3. If necessary, turn the **small right** knob to select the nearest airport page.

To Scroll Through the List of Nearest Airports

1. Press the **small right** knob to activate the cursor.
2. Turn the **large right** knob to scroll through the list. The scroll bar along the right-hand side of the page will indicate which part of the list is currently being viewed.
3. To remove the flashing cursor, press the **small right** knob.

To View Additional Information for a Nearby Airport

1. Highlight the identifier of the desired airport by scrolling through the list, as described in the procedure above.
2. Press **ENT** to display the airport location page for the selected airport.

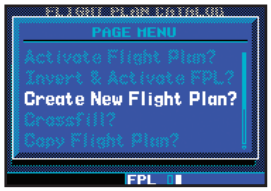


3. To view additional WPT pages for the selected airport (including the airport runway and airport frequency pages) press the **small right** knob to remove the flashing cursor. Turn the **small right** knob to display the additional WPT pages. When finished, press the **small right** knob to return the flashing cursor to the screen.

4. To return to the nearest airport page, verify that "Done?" is highlighted by the flashing cursor and press **ENT** (or press **CLR**).

To Create a New Flight Plan

1. Press the **FPL** key and turn the **small right** knob to display the flight plan catalog.

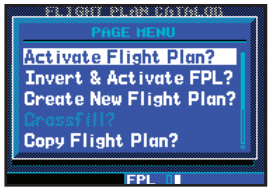


2. Press the **MENU** key to display the flight plan catalog options.
3. Turn the **large right** knob to highlight "Create New Flight Plan?" and press the **ENT** key.
4. A blank flight plan page will appear for the first empty storage location. Use the **small** and **large right** knobs to enter the identifier of the departure waypoint and press the **ENT** key.

5. Repeat step #4 above to enter the identifier for each additional flight plan waypoint. Once all waypoints have been entered, press the **small right** knob to return to the flight plan catalog.

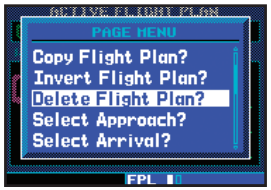
To Navigate a Flight Plan

1. Press the **FPL** key and turn the **small right** knob to display the flight plan catalog.
2. Press the **small right** knob to activate the cursor and turn the **large right** knob to highlight the desired flight plan.
3. Press the **MENU** key to display the flight plan catalog options.
4. Turn the **large right** knob to highlight "Activate Flight Plan?" and press the **ENT** key.



To Stop Navigating a Flight Plan

1. Press the **FPL** key.
2. Press the **MENU** key to display the active flight plan options.
3. Turn the **large right** knob to highlight "Delete Flight Plan?" and press the **ENT** key. Press the **ENT** key again to confirm.



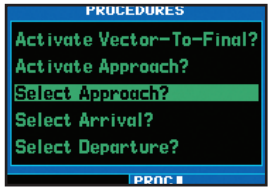
To Edit a Flight Plan

1. Press the **FPL** key and turn the **small right** knob to display the Flight Plan Catalog.
2. Press the **small right** knob to activate the cursor.
3. Turn the **large right** knob to highlight the desired flight plan and press the **ENT** key.
4. To add a waypoint to the flight plan: Turn the **large right** knob to select the point where you wish to add the new waypoint. (If an existing waypoint is highlighted, the new waypoint will be placed directly in front of this waypoint.) Use the **small** and **large right** knobs to enter the identifier of the new waypoint and press the **ENT** key.
5. To delete a waypoint from the flight plan: Turn the **large right** knob to select the waypoint you wish to delete and press the **CLR** key to display a "remove waypoint" confirmation window. With "Yes" highlighted, press the **ENT** key to remove the waypoint.
6. Once all changes have been made, press the **small right** knob to return to the flight plan catalog.

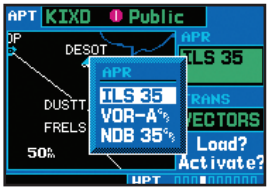
Selecting Approaches

In order to select an approach, you must first have an active direct-to or flight plan that terminates at an airport with a published approach.

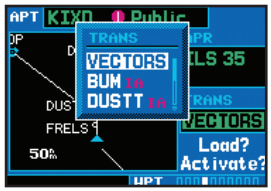
1. Press the **PROC** key to display the procedures page.
2. Turn the **large right** knob to highlight "Select Approach?" and press the **ENT key**.



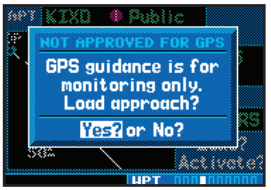
3. A window will appear listing the available procedures. Turn the **large right** knob to highlight the desired procedure and press the **ENT** key.



4. A second window will appear listing the available transitions. Turn the **large right** knob to highlight the desired transition waypoint and press the **ENT** key. The approach "Vectors" option assumes you will receive vectors to the final course segment of the approach and will provide navigation guidance relative to the final approach course.



5. Turn the **large right** knob to highlight "Load?" or "Activate?" and press the **ENT** key. "Load?" will add the procedure to the flight plan without immediately using it for navigation guidance. This allows you to continue navigating the original flight plan, but keeps the procedure available on the active flight plan page for quick activation when needed. "Activate?" overrides the "en route" portion of the active flight plan, proceeding directly to the "approach" portion.
6. For non-GPS approved approaches, a reminder window will appear indicating that GPS guidance on such approaches is strictly for monitoring only—use the VLOC receiver and external CDI (or HSI) for primary navigation. To confirm this reminder, highlight "Yes?" and press the **ENT** key.

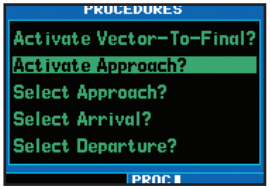


Not all approaches in the database are approved for GPS use. As you select an approach, a "GP_S" designation to the right of the procedure name indicates the procedure can be flown using the GPS receiver. *Some procedures will not have this designation, meaning the GPS receiver may be used for supplemental navigation guidance only. If the GPS receiver cannot be used for primary guidance, you must use the appropriate receiver for the selected approach (e.g., VOR or ADF).* The final course segment of ILS approaches, for example, must be flown by tuning the VLOC receiver to the proper frequency and coupling the VLOC receiver to the external CDI (or HSI).

A selected approach may be *activated* or *loaded*. Activating the approach overrides the "en route" portion of the active flight plan, proceeding directly to the "approach" portion (for a full approach, directly to the approach transition). Activating the approach also initiates automatic CDI scaling transitions as the approach progresses.

In many cases, it may be easiest to "Load" the full approach while still some distance away, en route to the destination airport. Later, if vectored to final, use the following steps to select "Activating an Approach with Vectors-To-Final"—which makes the inbound course to the FAF waypoint active. Otherwise, activate the full approach using the "Activate Approach?" option.

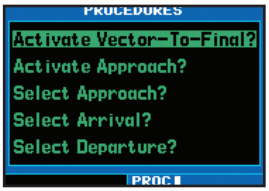
Activating an Approach



1. With an approach loaded in the active flight plan, press the **PROC** key to display the procedures page.
2. Turn the **large right** knob to highlight "Activate Approach?".
3. Press the **ENT** key.

Activating an Approach with Vectors-To-Final

The "Activate Vector-To-Final?" option allows you to activate the final course segment of the approach. This option assumes you will receive vectors to the final approach course and guides you to intercept the final course, before reaching the FAF.



1. With an approach loaded in the active flight plan, press the **PROC** key to display the procedures page.
2. Turn the **large right** knob to highlight "Activate Vector-To-Final?".
3. Press the **ENT** key.

Flying an Approach

Due to the variety of available approach procedures, the specific steps required will vary according to the approach selected. Keep the following general guidelines in mind while flying the approach:

- The 400W series is designed to complement your printed approach plates and improve situational awareness throughout the approach. However, you must always fly an approach as it appears on the approach plate.
- You will typically select the destination airport as the last waypoint in the active flight plan or by using the **direct-to** key. Doing so ensures that the desired waypoint will automatically appear when choosing the "Select Approach?" option from the *procedures page*. Otherwise, you must first choose the airport, then the approach procedure.
- When a localizer-based approach (such as an ILS) is loaded, the desired frequency is automatically placed in standby on the VLOC window. To activate the frequency, press the **VLOC flip/flop** key.
- If the VLOC receiver will be used for the approach, be sure to switch the external CDI (or HSI) to "VLOC" by pressing the **CDI** key. "VLOC" will appear directly above the **CDI** key.
- An "Auto ILS CDI" setting provides automatic switching to "VLOC" as you intercept the final approach course. When the ILS approach is activated (and the correct frequency is active in the VLOC window), the unit will automatically switch within 1.2 nautical miles left or right of the approach course. This switch can take place anywhere from 2.0 to 15.0 nautical miles from the FAF. The switch occurs gradually to prevent abrupt CDI changes. This does not occur automatically when configured for the King KAP140/KFC225 autopilots as Auto ILS CDI Selection is not allowed.
- As you progress to each approach waypoint, a waypoint alert message ("NEXT DTK ###°") will appear in the lower right corner of the display.
- When you should begin a course change (via a standard rate turn), turn advisories ("TURN TO ###°") will appear in the lower right corner of the display.
- For GPS-based approaches, receiver autonomous integrity monitoring (RAIM) will monitor satellite conditions and alert you—using an "INTEG" at the bottom left corner of the display — if protection limits cannot be

maintained. If this occurs, the GPS receiver should not be used for primary navigation guidance. Revert to an alternate navigation source, or select an alternate destination airport. LP, LP +V, LPV, LNAV+V, and L/VNAV approaches will downgrade to LNAV if GPS integrity cannot be met. There is no need to switch to guidance by other navigation equipment unless GPS LNAV is insufficient or integrity degrades further.

- Within 31 nautical miles of the destination airport, CDI scaling will transition from 2.0 NM (en route mode, or "ENR") to 1.0 nautical mile (terminal mode, or "TERM"). Conversely, when leaving the departure airport, CDI scaling will transition from 1.0 NM to 2.0 NM when 30 miles out. GPS-based approaches will see a second transition when within 2.0 NM of the final approach fix, scaling from 1.0 NM to angular full-scale deflection (approach mode, or "LNAV, LNAV+V, L/LNAV, LP, LP +V, or LPV").
- A "RT TO xxx° x S" or "LT TO xxx° x S" prompt will appear in the lower right corner of the display to advise you when you are at a safe distance to initiate a procedure turn. The procedure turn is displayed on the map page, but guidance through the turn itself is not provided except via roll steering-equipped autopilots.
- Alerts for proper holding pattern entry (e.g. "HOLD DIRECT") are displayed in the lower right corner of the display. Waypoint sequencing is automatically suspended (indicated by "SUSP" directly above the **OBS** key) at the holding waypoint. Press the **OBS** key again to return to automatic waypoint sequencing. For course reversals, waypoint sequencing is suspended for one trip around the holding pattern only, after which it will return to automatic waypoint sequencing.
- The CDI will guide you through a DME arc. Just keep the needle centered as you fly along the arc.
- As you cross the missed approach point, "SUSP" will appear above the **OBS** key, indicating that automatic sequencing of waypoints is suspended at the missed approach point, and a "from" indication will appear on the CDI (or HSI).

Flying the Missed Approach

1. After crossing the Missed Approach Point, press the **OBS** key. The next waypoint in the approach is automatically offered as the destination waypoint.
2. Follow the missed approach procedures, as published on your approach plate, for proper climb and heading instructions.
3. An alert message in the lower right hand corner of the screen will recommend entry procedures for the holding pattern (e.g., "HOLD TEARDROP"). As you fly the holding pattern, a timer appears on the default NAV page. The timer automatically resets on the outbound side of the hold when you are abeam the hold waypoint. The timer again resets as you turn inbound (within approximately 30° of the inbound course).

4. The unit will provide course guidance only on the inbound side of the holding pattern, however guidance is provided along the entire holding pattern via roll steering-equipped autopilots. When leaving the holding pattern to re-fly the approach (or another approach) press the **PROC** key to "Select Approach?" or "Activate Approach?" as previously described. (Or, use the **direct-to** key to select another destination).

Annunciation	Description
LPV	Localizer Performance with Vertical guidance (LPV) approach. Fly to LPV minimums. A yellow background indicates that the approach is safe to continue but a downgrade to LNAV may occur.
LP	LP indicates Localizer Performance with no vertical guidance.
LP +V	LP +V indicates Localizer Performance with advisory vertical guidance. Fly LP minimums down to the MDA and missed approach location. This annunciation is available in SW Ver 5.10, or later.
L/VNAV	Lateral Navigation and Vertical Navigation (LNAV/VNAV) approach. Fly to LNAV/VNAV minimums.
LNAV+V	GPS approach using published LNAV minima. Advisory vertical guidance is provided.
LNAV	Lateral Navigation approach. Fly to LNAV minimums.
MAPR	Missed Approach indicates the system is providing missed approach integrity and CDI full-scale deflection ±0.3 NM.
ENR	En route, CDI full-scale deflection is 2.0 NM or current CDI scale selection, whichever is smaller.
TERM	Terminal, CDI full-scale deflection is 1.0 NM or current CDI scale selection, whichever is smaller.
DPRT	Departure, indicates the system is using non-precision approach integrity. HAL = 0.3 and CDI full-scale deflection is 0.3 NM.
OCN	Oceanic, CDI full-scale deflection is 2.0 NM.
LOW ALT (lower window)	For LNAV+V, LNAV/VNAV, or LPV approaches, the LOW ALT annunciation indicates the aircraft's estimated height is lower than the Final Approach Waypoint height by more than the current VPL plus 50 meters. This annunciation will not be active when TAWS or Terrain is operational.

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